WHAT IS CLAIMED IS:

1. A holding device for a first optical element, comprising:

a first holding portion communicated with an outer edge of the first optical element to hold the first optical element;

a connecting portion connected to the first holding portion; and

a drive mechanism provided in the connecting portion to move the first optical element by relatively moving the first holding portion and the connecting portion.

2. The optical element holding device according to claim 1, further comprising a second holding portion provided in the connecting portion to hold a second optical element.

3. The optical element holding device according to claim 1, further comprising a measuring device disposed between the first holding portion and the connecting portion to measure the movement of the first optical element.

4. The optical element holding device according to claim 3, further comprising:

a second holding portion provided in the connecting portion to hold a second optical element; and

a heat insulation element located between the measuring device and at least one of the first and the second optical elements.

5. The optical element holding device according to claim 3, wherein the measuring device measures an amount of displacement of the first holding portion with respect to the

connecting portion, and wherein the movement of the first optical element is determined based on the measured displacement.

6. The optical element holding device according to claim 5, wherein the measuring device includes an optical encoder having a measured portion fixed to the first holding portion and a measuring head fixed to the connecting portion.

7. The optical element holding device according to claim 3, wherein the connecting portion is annular having a peripheral surface, and wherein the drive mechanism is one of at least three equally spaced drive mechanisms arranged along the peripheral surface of the connecting portion.

8. The optical element holding device according to claim 7, wherein the measuring device is one of at least three equally spaced measuring devices arranged along the peripheral surface of the connecting portion, and each of the measuring devices is located midway between two of the drive mechanisms that are adjacent.

9. The optical element holding device according to claim 1, wherein the connecting portion is annular having a peripheral surface, wherein the drive mechanism includes an actuator that moves in a predetermined direction, wherein the actuator is arranged in the connecting portion such that the displacement of the actuator is tangential to the connecting portion.

10. The optical element holding device according to claim 9, further comprising a rotating pivot mechanism located between the actuator and the connecting portion.

11. The optical element holding device according to claim 9, wherein the rotating pivot mechanism includes a cutaway spring formed in the connecting portion and defined by cuttings intersect the optical axis of the first optical element.

12. The optical element holding device according to claim 9, wherein the connecting portion includes a cutaway portion having an opening in which the actuator is accommodated.

13. The optical element holding device according to claim 12, wherein the actuator includes a piezo-electric element.

14. The optical element holding device according to claim 1, wherein the drive mechanism comprises:

an actuator provided on the connecting portion, wherein the actuator displaces in a predetermined direction;

a first link mechanism connected to the actuator, the connecting portion and the first holding portion, to transfer the displacement of the actuator to the first holding portion; and

a second link mechanism, connected to the connecting portion and the first holding portion, to guide relative movement of the holding portion with respect to the connecting portion in a predetermined direction.

15. The optical element holding device according to claim 14, wherein the displacement direction of the actuator differs from the movement direction of the first optical element, and the first link mechanism converts the displacement direction of the actuator to the movement

direction of the first optical element.

16. The optical element holding device according to claim 14, wherein the first link mechanism includes a displacement increasing mechanism connected to the actuator to amplify the displacement of the actuator.

17. The optical element holding device according to claim 16, wherein the displacement increasing mechanism includes a cutaway spring formed in the connecting portion and defined by cuttings intersect the optical axis of the first optical element.

18. The optical element holding device according to claim 16, wherein the cutaway spring includes an elastic hinge link mechanism defined by a plurality of through holes extending to cross the optical axis of the first optical element, and a plurality of slits formed to be continued to the through holes.

19. The optical element holding device according to claim 14, wherein when the displacement of the actuator is transferred to the first holding portion by the first link mechanism, the second link mechanism guides the first holding portion in a predetermined direction in cooperation with the first link mechanism.

20. The optical element holding device according to claim 19, wherein the second link mechanism includes a parallel link mechanism defined by a plurality of through holes extending to cross the optical axis of the first optical element and a plurality of slits formed to be continued to the through holes, and wherein the parallel link

mechanism is located along the tangential line of the first optical element.

21. The optical element holding device according to claim 19, wherein the connecting portion has an upper end, a lower end and a mounting surface formed on an imaginary plane including at least one of the upper end and the lower end and extending to cross the optical axis, and wherein when a plurality of optical element holding devices are stacked along the optical axis, the mounting surface is opposed to an mounting surface of the adjacent optical element holding device.

22. The optical element holding device according to claim 19, wherein the second link mechanism guides the first holding portion such that the position of the optical element matches an optical pivotal position of the optical element.

23. The optical element holding device according to claim 1, further comprising a return mechanism connected to the first holding portion to return the first holding portion to its original position.

24. The optical element holding device according to claim 1, wherein the first holding portion has an inner ring portion to which the outer edge of the first optical element is fixed, and the connecting portion has an outer ring portion having a mounting portion to which an outer ring portion of another optical element holding device is mounted, wherein the drive mechanism includes an actuator provided on the outer ring portion to connect the inner ring portion and the outer ring portion.

25. The optical element holding device according to claim 24, wherein the outer ring portion has a cylindrical wall having an opening, wherein the actuator is located in the opening.

26. The optical element holding device according to claim 24, wherein the drive mechanism includes a first link mechanism and a second link mechanism, and wherein the first link mechanism and the second link mechanism are formed in the cylindrical wall of the outer ring portion, and wherein the first link mechanism is connected to the inner ring portion and transfers displacement of the actuator to the inner ring portion, and the second link mechanism is connected to the inner ring portion and guides the inner ring portion to a predetermined direction in cooperation with the first link mechanism when displacement of the actuator is transferred to the inner ring portion.

27. The optical element holding device according to claim 24, wherein the outer ring portion has two ends, and wherein the mounting portion is provided in at least one of the ends of the outer ring portion.

28. The optical element holding device according to claim 24, further comprising:

a measuring device disposed between the inner ring portion and the outer ring portion to measure the relative movement of the inner ring portion with respect to the outer ring potion, wherein the outer ring portion has an peripheral wall having an opening, wherein the measuring device includes a measured portion provided on the inner ring portion and a measuring head located in the opening to measure a displacement of the measured portion, wherein a measured

displacement of the measured portion is readable by the measuring head through the opening.

29. A barrel structure accommodating a plurality of optical elements, comprising:

an optical element holding device which holds at least one of the optical elements, wherein the optical element holding device includes:

a holding portion communicated with an outer edge of one of the optical elements to hold the optical element;

a connecting portion connected to the holding portion; and

a drive mechanism provided in the connecting portion to move the optical element by relatively moving the holding portion and the connecting portion.

30. An exposure apparatus for transferring a pattern image formed on a mask onto a substrate using exposure light beam, comprising:

a projecting optical system having at least one barrel module, wherein the barrel module includes:

a optical element located on the path of the exposure light beam;

a optical element holding portion communicated with an outer edge of the optical element to hold the optical element;

a connecting portion connected to the holding portion; and

a drive mechanism provided in the connecting portion for moving the optical element by relatively moving the holding portion and the connecting portion.

31. A method for making a semiconductor device using an

exposure apparatus that transfers a circuit pattern image formed on a mask through a projection optical system onto a substrate using exposure light beam, the method comprising:

applying a photo sensitive agent on a workpiece;

exposing the circuit pattern image to the workpiece using the exposure apparatus, wherein the exposure apparatus includes at least one barrel modules, wherein each of the barrel modules includes:

a optical element located on the path of the exposure light beam;

a optical element holding portion communicated with an outer edge of the optical element to hold the optical element;

a connecting portion connected to the holding portion; and

a drive mechanism provided in the connecting portion to move the optical element by relatively moving the holding portion with respect to the connecting portion;

wherein the exposing step includes adjusting a image formation property of the projection optical system by moving the optical element;

developing the exposed workpiece, wherein the photo sensitive agent forms a resist corresponding to the circuit pattern on the workpiece by the developing;

etching a exposed region except for the resist; and

removing the resist from the workpiece.

32. The method according to claim 31, wherein a vacuum ultra violet exposing light beam is used in the exposing step.

33. An optical element holding device comprising:

a ring body accommodating an optical element, wherein the ring body includes:

an inner ring portion communicated with a peripheral edge of the optical element to hold the optical element; and

an outer ring portion uniformly formed with the inner ring portion; and

a drive mechanism provided in the ring body to move the inner ring portion by relatively moving the inner ring portion and the outer ring portion, wherein the drive mechanism includes:

an actuator provided on the ring body, wherein the actuator displaces in a predetermined direction;

a displacement increasing mechanism formed in the outer ring portion; and

a guide mechanism formed in the outer ring portion and connected to the displacement increasing mechanism and the inner ring portion, wherein the guide mechanism transfers displacement of the actuator to the inner ring and converts the displacement of the actuator in a direction substantially along the optical axis of the optical element.

34. The optical element holding device according to claim 33, wherein the outer ring portion has an outer wall and an inner wall, wherein the displacement increasing mechanism includes a plurality of slits and a plurality of through holes, wherein each of the slits and the through holes extends between the outer wall and the inner wall in an imaginary plane including the optical axis.

35. The optical element holding device according to claim 33, wherein the outer ring portion has an outer wall and an inside wall, and the guide mechanism includes a

parallel link mechanism defined by a plurality of slits and a plurality of through holes, each of the slits and the through holes extending between the outer wall and the inside wall in an imaginary plane including the optical axis.